

REMARKS

Claims 1-25 are pending in the application.

Priority Document

In section 12 of the Office Action Summary it was noted that “None of” the certified copies of the priority documents had been received. Since this is a section 371 application, it is understood that the priority document (CN 200410021751.8) has been provided to the Office by the International Bureau. If this is not the case, and any certified copies of priority documents are required, the Examiner is respectfully asked to note this in the next action so that appropriate action can be taken.

Claim Rejections under 35 U.S.C. § 112

Claims 1-7, 9, 11, 13, 15, 17 and 18-25 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 7, 9, 11, 13, 15, 17 and 18-25 were rejected for lack of antecedent basis for the term “raw material” in claim 7.

Claims 1-6 were rejected as being incomplete. Claim 1 has been amended to recite the missing starting material, previously recited in claim 7. Claim 7 has been amended to recite some specific possible raw materials disclosed in the Examples and original claim 20.

Claim 18 was rejected for being improperly dependent. The dependency of claim 18 has been corrected.

Other amendments to the claims have been made to correct clerical errors or other informalities to improve clarity. In particular, “2³” in claims 7, 18, 19, 20 has been corrected to “2” and “3³C” in claim 21 has been corrected to “3°C.”

Withdrawal of the rejections under section 112 is respectfully requested.

Claim Rejections under 35 U.S.C. § 103

Claims 1-25 were rejected under 35 U.S.C. 103 (a) as being unpatentable over US 7667055 to Vu et al. (Vu) in view of US RE40120 to Bombardelli (Bombardelli ‘120), further in view of US 7288665 to Holton (Holton ‘665), US 6706896 to Holton et al. (Holton ‘896) and US 6500966 to Bombardelli (Bombardelli ‘966). The applicant respectfully traverses.

The present application relates to a process for the preparation of synthetic taxanes comprising the step of selectively protecting the hydroxyl group at the C(7) position of a taxane raw material. As amended, a process for the preparation of synthetic taxanes comprising the step of

selectively protecting the hydroxyl group at the C(7) position (C(7)-OH) on a taxane raw material bearing side chains comprising C(7)-OH, C(10)-OH and C(13) having C(2')-OH with a lanthanon compound is claimed. Vu discloses a process for production of polycyclic fused compounds using a silicon-based protecting group, wherein at least two hydroxy groups of a polycyclic fused compound, e.g., position 7- and 10- hydroxy groups, are selectively protected. Although cerium trichloride (CeCl_3) is used in Examples 43 and 45, the CeCl_3 is not used to protect the 7- and 10- hydroxy groups of docetaxel. In example 43, the 7- and 10- hydroxy groups are protected by a silicon-based compound (see the title and structure formula of Example 43). In example 45, the 10- hydroxy group is protected by acetoxy group, and the 7- hydroxy group is not protected (see the title of Example 45). Therefore, there is no teaching or suggestion in Vu to use a lanthanon compound such as CeCl_3 in protecting the 7- hydroxy group of a taxane.

The Bombardelli references disclose simultaneously protecting the 7- and 10- hydroxyl groups of 10-deacetylbaccatin III. They are silent about selectively protecting the 7- hydroxyl group using a lanthanon compound.

The Holton references disclose selective silylation of the C(7) hydroxy group of a C(10) acylated taxane. However, they neither disclose nor suggest the use of a lanthanon compound. Furthermore, the process of the Holton references is much more complicated than the present invention. Therefore, it is respectfully submitted that the present invention shows substantial progress over the Holton references in this regard.

In view of the foregoing, it is respectfully submitted that there is no teaching, suggestion or motivation in the cited references, alone or in combination, for a person skilled in the art to selectively protect the C7-OH of on a taxane raw material bearing side chains comprising C(7)-OH, C(10)-OH and C(13) having C(2')-OH with a lanthanon compound when preparing synthetic taxanes, as claimed.

Furthermore, the effect of the present invention is unpredictable from the prior art., and it is unexpected that lanthanon compounds have high selectivity for C(7)-OH in the paclitaxel parent nucleuses, and hardly react with C(2')-OH and C(10)-OH.

As described in the present application at page 4, line 23 to page 5, line 1, "The studies of C(2')-OH, C(7)-OH and C(10)-OH show that the activities of said three -OHs are in an order of $\text{C}(2') < \text{C}(7) < \text{C}(10)$, and that the hydrolysis difficulty after esterification by acylation is in an order of $\text{C}(2') < \text{C}(7) < \text{C}(10)$. Provided that a triacetyl compound is formed, esters at C(10)-position are also easily hydrolyzed if esters at C(7)-position are completely hydrolyzed. Currently, there are no esters at C(7)-position in the present invention. By using the great difference in the difficulty between

esters at C(2')-position and esters at C(10)-position, it is convenient to hydrolyze esters at C(2')-position as completely as possible by controlling the amount of alkali, and meanwhile hydrolyze esters at C(10)-position as less as possible, so as to increase the yield of the principal product, C(10)-acetyl taxane.” Various experiments have been carried out and described in the present Examples to demonstrate the beneficial effect of the present invention. It can be concluded that the present invention solves a long-felt but unsolved technical problem in the art, and achieves substantial progress over the prior art.

Accordingly, it is respectfully submitted that the pending claims are non-obvious and are patentable over the cited art, and withdrawal of the rejections under 35 U.S.C. §103 is respectfully requested.

Conclusion

Applicants believe that all pending claims are allowable and respectfully request a Notice of Allowance for this application from the Examiner. The claim amendments are without prejudice to the subsequent prosecution of previously presented claims or other subject matter disclosed in the application in one or more continuation or further divisional applications.

Should the examiner believe that a telephone conference would expedite the prosecution of this application, applicant's attorney requests that the examiner contact him at the telephone number below.

Applicants hereby petition for any extension of time that may be required to maintain the pendency of this case, and any required fee for such extension or any further fee required in connection with the filing of this amendment is to be charged to Deposit Account No. 504480 (Order No. CPALP006).

Respectfully submitted,
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